

**Report on Best Practices:**  
**Reducing Risks from Severe Weather in Construction**

**Iowa Department of Public Safety**

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**In cooperation with**

**Rebuild Iowa Office**

**Iowa Department of Public Defense**  
**Division of Homeland Security and Emergency Management**

**Iowa Department of Natural Resource**

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## **I. Introduction**

The Iowa General Assembly enacted 2009 Iowa Acts, House File 705 last year, which contained language requiring the Building Code Commissioner to “review and assess best practices” regarding “best practices in the design, construction, and maintenance of buildings, safe rooms, and storm shelters to reduce the risk of personal injuries from tornadoes and other severe weather. The statutory language required the Building Code Commissioner to cooperate with the Department of Public Defense, the Department of Natural Resources, and the Rebuild Iowa Office in conducting the review and preparing the assessment. The review commenced with locating existing authoritative documents and standards for design of storm shelters and safe rooms, followed by consultation with the other agencies identified in the statute and a variety of other state agencies identified by the Building Code Commissioner as having a potential interest in the subject. This report summarizes the finding of the Building Code Commissioner based upon the existing standards identified and consultation with representatives of other state agencies.

The findings reported here will provide the basis for administrative rules which are being proposed by the Building Code Commissioner. That rulemaking process will provide an opportunity for additional input by state agencies and from other public and private entities which may potentially be affected by the standards adopted, as well as from the general public.

## **II. Background**

Substantial research has been conducted on construction resistant to weather events, particular those involving high speed winds. This work has been utilized by the Federal Emergency Management Agency, the agency of the United State Government charged with addressing disaster mitigation and response, and the International Code Council, a private organization which is the premier developer and publisher of building codes, to develop construction standards for buildings and facilities resistant to high speed winds, particularly those resulting from hurricanes and tornadoes.

The Federal Emergency Management Agency (FEMA) has produced two basic source documents on the construction of wind-resistant structures, and the International Code Council has published a standard for construction of these facilities. These may be either separate structures or portions of buildings intended to provide shelter from extreme weather events. They are variously known as “storm shelters” or “safe rooms.” However, since the intent is to provide safety specifically from hazards presented by extreme wind events, and at the suggestion of the Division of Homeland Security and Emergency Management and the Rebuild Iowa Office, this report will adopt, and recommend the adoption by Iowa policymakers, of the term “weather safe room.”

The two FEMA documents are the following:

- FEMA 320, *Taking Shelter from the Storm: Building a Safe Room in Your House or Small Business*, 3<sup>rd</sup> edition, August, 2008
- FEMA 361, *Design and Construction Guidance for Community Safe Rooms*, 2<sup>nd</sup> edition, August, 2008.

The International Code Council (ICC) standard is:

- ICC 500-2008, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*, August, 2008

### **III. Identifying Best Practices**

Neither the Building Code Commissioner nor the Department of Public Safety elected to conduct any original research on the design and construction of weather safe rooms. Rather, in consultation with the Rebuild Iowa Office and the Division of Homeland Security and Emergency Management of the Department of Public Defense, the Department concluded that the most expeditious way to identify best practices which underpin the development and adoption of Iowa standards for weather safe rooms, would be to review current literature and existing standards and then to consult with a broad range of state agencies as to whether the existing standards would apply practically to the design and construction of weather safe rooms in Iowa. This process was undertaken; ICC 500-2008, *ICC/NSSA Standard for the Design and Construction of Storm Shelters*, was identified as the appropriate standard to subject to a review by state agencies in Iowa, for the following reasons:

- The International Code Council is the leading independent body in the development of construction codes and standards; its International Building Code and related codes are adopted as part of the State Building Code and by many local jurisdictions in Iowa as part of their local building codes.
- ICC 500-2008 was developed jointly by the International Code Council and the National Storm Shelter Association, a national organization of experts on the design and construction of facilities intended to provide near absolute life protection during extreme wind events.
- The Federal Emergency Management Agency (FEMA) utilizes ICC 500-2008 as the standard establishing minimum requirements for weather safe rooms constructed under FEMA guidelines.

A meeting introducing representatives of various state agencies (see Attachment A) to the statutory requirement to produce this report and to ICC 500-2008 was held in November, 2009. Agency representatives were asked to review ICC 500-2008 and to report any concerns they identified with regard to using ICC 500-2008 as the basis for Iowa standards for design and construction of weather safe rooms. No agency representatives reported identifying any problems with using ICC 500-2008 as the basis for Iowa standards for weather safe rooms. One point of discussion during the meeting was that ICC 500-2008 identifies requirements both for tornado-safe facilities and for hurricane-safe facilities and that Iowa standards should incorporate those elements which relate to tornado safety and not to hurricane safety.

#### **IV. Recommendations**

The Building Code Commissioner and the Department of Public Safety recommend the following:

- The adoption of a rule as part of the State Building Code, requiring that weather safe rooms built in Iowa after the effective date of the rule, comply with the provisions of ICC 500-2008, except that those provisions which relate only to safety from hurricanes and not from tornadoes, should not apply to construction of these facilities in Iowa.
- The development and dissemination by the Building Code Commissioner, the Rebuild Iowa Office, the Division of Homeland Security and Emergency Management, the Department of Natural Resources, and other interested state agencies of informational and education materials on the design, construction, use, and maintenance of weather safe rooms, to encourage their construction in or proximate to facilities where their availability could significantly mitigate potential injury and loss of life from tornadoes and other extreme wind events.

## Attachment A

### Agencies Invited to Meeting on Safe Room Standards November 25, 2009

1. Iowa Department of Public Safety
2. Rebuild Iowa Office
3. Iowa Department of Public Defense, Division of Homeland Security and  
Emergency Management
4. Iowa Department of Natural Resources
5. Iowa Department of Corrections
6. Iowa Department of Administrative Services
7. Iowa Department of Human Services
8. Iowa Department of Transportation
9. Iowa Department of Inspections and Appeals
10. Iowa Department of Education
11. Iowa Department of Agriculture and Land Stewardship
12. Iowa Board of Regents

**PUBLIC SAFETY DEPARTMENT[661]**

**Notice of Intended Action**

**Twenty-five interested persons, a governmental subdivision, an agency or association of 25 or more persons may demand an oral presentation hereon as provided in Iowa Code section 17A.4(1)“b.”**

**Notice is also given to the public that the Administrative Rules Review Committee may, on its own motion or on written request by any individual or group, review this proposed action under section 17A.8(6) at a regular or special meeting where the public or interested persons may be heard.**

Pursuant to the authority of Iowa Code section 103A.7 as amended by 2009 Iowa Acts, chapter 142, the Building Code Commissioner hereby gives Notice of Intended Action to adopt new Chapter 315, “Weather Safe Rooms,” Iowa Administrative Code, with the approval of the Building Code Advisory Council.

With the enactment of 2009 Iowa Acts, chapter 142 (House File 705), the Building Code Commissioner was directed to establish requirements for the design and construction of safe rooms and storm shelters. The rules proposed herein would establish requirements for “weather safe rooms” built for safety from the hazards of tornadoes. Such standards exist for other weather events, particularly hurricanes; however, tornadoes are the primary concern for safety from weather events in Iowa, so the standards proposed reflect this. There is a nationally accepted standard for the design and construction of such facilities, published jointly by the International Code Council and the National Storm Shelter Association, and that standard is used as the basis for the rules proposed herein. The standard is integrated with the family of building codes published by the International Code Council, several of which have been adopted by the Building Code Commissioner.

The statute requires that the Building Code Commissioner consult with the Iowa Department of Public Defense, the Iowa Department of Natural Resources, and the Rebuild Iowa Office prior to commencing with this rule making. Each of these agencies was consulted, as were a number of other state agencies, including the Board of Regents, the Department of Education, the Department of Corrections, the Department of Human Services, the Department of Agriculture and Land Stewardship, the Department of Inspections and Appeals, the Department of Transportation, and the Department of Administrative Services.

It should be noted that the rules proposed herein would become a part of the State Building Code when adopted. However, neither these rules nor the underlying statute requires the construction of weather safe rooms. Rather, the standards will apply if a weather safe room is being constructed, whether it is required as part of the construction by another provision of law or is being included in a project voluntarily.

There will be a public hearing regarding the proposed rules at 10 a.m. on March 2, 2010, in the First Floor Public Conference Room 125, State Public Safety Headquarters Building, 215 East 7th Street, Des Moines. Any interested person may comment on the proposed rules orally, in writing, or both at the public hearing, or may submit written comments by mail or E-mail at any time until 4:30 p.m. on March 8, 2010. Comments may be mailed to Agency Rules Administrator, Iowa Department of Public Safety, 215 East 7th Street, Des Moines, Iowa 50319, or submitted by E-mail to [admrule@dps.state.ia.us](mailto:admrule@dps.state.ia.us).

Provisions of the State Building Code are subject to provisions for consideration of alternate materials or methods of construction as specified in Iowa Code section 103A.13.

These rules are intended to implement 2009 Iowa Acts, chapter 142.

The following amendment is proposed.

Adopt the following new 661—Chapter 315:

CHAPTER 315  
WEATHER SAFE ROOMS

**661—315.1(83GA,ch142) Scope.** The standards adopted in this chapter shall apply to the design and construction of weather safe rooms constructed on or after January 1, 2011. The rules in this chapter do not require the construction of a weather safe room or rooms for any construction project but establish standards for design and construction of weather safe rooms when their construction is required by another provision of law or is incorporated voluntarily in a construction project.

**661—315.2(83GA,ch142) Definition.** The following definition shall apply to this chapter:

“*Weather safe room*” means a building, structure, or portion of a building or structure built in accordance with the requirements established in this chapter and designated for use during a severe wind storm event.

**661—315.3(83GA,ch142) Requirements.** Any weather safe room constructed on or after January 1, 2011, shall be designed and constructed in compliance with the provisions of ICC 500-2008, ICC/NSSA Standard for the Design and Construction of Storm Shelters, published by the International Code Council, 500 New Jersey Avenue NW, 6th Floor, Washington, D.C. 20001. Any provision which would apply to a hurricane safe structure, but not to a tornado safe structure, shall not apply. For any provision for which a distinction is made between a tornado safe structure and a hurricane safe structure, the requirement for a tornado safe structure shall apply.

These rules are intended to implement 2009 Iowa Acts, chapter 142.